

Proto-Uralic expansion from the Lozva-Atlym culture

Finngreek

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This presentation discusses the current interdisciplinary bounds of Uralic historical studies – linguistic, genetic, and cultural – and concludes with a new model for Uralic expansion:

2000 BCE: Uralic DNA in the Seima-Turbino zone (Ob-Irtysh river basin)

1200 BCE: Proto-Uralic in the Lozva-Atlym culture (Ob-Konda)

900 BCE: Archaic Uralic in the Gamayun-Itkul culture (Konda-Tavda-Iset + Kama)

700 BCE: Ugric in the Itkul-Sargat culture (Iset-Tobol-Irtysh); > Samoyedic (Chulyim)
: Western Uralic in the Ananyino culture (Volga-Kama)

500 BCE: Terminal Uralic branches

River guide:

Ob

|

Konda

|

Tavda

|

Volga – Kama – Chusovaya – Iset – Tobol – Irtysh – Chulyim

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1. Overview: Uralic linguistics

- Proto-Uralic (Aikio 2022): No clear phylogenetic groupings for the Uralic branches; no clear external relations; PU lexicon reflects a hunter-gatherer speech community.
- Proto-Uralic kinship terms typologically east Siberian (Metsäranta et al. 2025: 146).
- "Core Zones" of the Uralic branches defined and mapped (see Saarikivi 2022):
Sami in Lakeland | Finnic in Estonia | Mordvinic on the Lower Oka
Mari on the Oka-Volga | Permian on the Volga-Kama
Ugric on the Iset-Tavda-Tobol-Irtysh | Samoyedic on the Chulym
Proto-Uralic on the Tavda-Tobol?
- Western Uralic sprachbund evidenced by substrate (Aikio 2021, Metsäranta 2025) in the same spacetime as Indo-Iranian languages; II => U parallel loans into the western and Ugric sprachbunds (Holopainen 2019, Finngreek 2025 + 2026a).
- Proto-Samoyedic near the Upper Yenisei by the end of the 1st millennium BCE, based on hydronymic evidence (Janhunen 2012: 76).
- Uralic had a significant hydronymic and dendronymic lexicon, e.g. *jokə 'river', *mučka 'riverbend', *orka 'river-valley (in a forest)'; *ara 'flood meadow', *jänkä 'bog', *tuwə 'lake'; *pVwə 'tree', *d'Amə 'bird-cherry', *kojwa 'birch', *kowsə 'spruce', *sAkxa 'Siberian pine', *wamta 'forest', *lantə 'lowland (in a forest)'.

1. Overview: Uralic genetics

- A new common view: Uralic languages spread with Yakutia_LNBA Y-DNA, specifically Kra001-type ancestry (Zeng et al. 2025, Grünthal et al. 2022). This "Yak-Kra" ancestry spread from Krasnoyarsk to Rostovka ca. 2200-1800 BCE.
- Separately, a "K=9" ancestry component has been connected to Uralic speakers, and is maximized in Ugric + Samoyedic on the Lower Ob river (Tambets et al. 2018).
- Four Uralic-speaking admixture clusters: Sami, Finnic, "Volga" (Mordvin, Mari, and Permian), and Ob-Ugric + Samoyedic (Norvik et al. 2022: 34), indicating secondary areal contacts after Uralic diversification.
- Arrival of Siberian ancestry to the Baltic by ca. 500 BCE was synchronous with the diversification of western Uralic (Saag et al. 2019).
- "Proto-Ugric" community developed from an admixture of the Mezhevskaya culture (Central Urals ca. 13th-7th centuries BCE) with Nganasan-like DNA (Török 2023).

1. Overview: Uralic cultures

- A new common view: Uralic-affiliated Yak-Kra DNA spread from southern Siberia to western Siberia during the Seima-Turbino phenomenon (ST) ca. 2200-2000 BCE (Grünthal et al. 2022, Zeng et al. 2025).
- Alternative views include Proto-Uralic in the Koptiyaki culture of the Central Urals ca. 2500 BCE (Häkkinen 2023); or the Garino-Bor culture (and related cultures) of the Kama ca. 3000-1900 BCE (Parpola 2022: 265), before Uralic ST diversification.
- ST in the Volga-Kama ca. 1900-1600 BCE has been proposed as Uralic-speaking: Nautical traders in the context of an Indo-Iranian economy (Grünthal et al. 2022).
- ST tradition lasted on the Volga-Kama until the formation of the Ananyino culture, including the Akozino and Akhmylovo cemeteries ca. 800-500 BCE (Parpola 2013). Akozino-Akhmylovo warrior-traders brought axes from the Mid-Volga to the Baltic Sea region (e.g. Daugava river) ca. 800-500 BCE.
- Proto-Finnic reached the Baltic from the Volga-Kama Ananyino by ca. 550 BCE, based on N tarands and Akozino-Mälar axes (see Lang 2025: 96-97).
- Proto-Samoyedic in the Minusinsk Tagar culture ca. 800-100 BCE (Parpola 2013).
- Ugric in the west Siberian Itkul and Sargat cultures ca. 700-200 BCE (Török 2023).

1. Overview: Uralic cultures

- Itkul culture evolved from the Gamayun culture ca. 1000-700 BCE, and was later absorbed into the Sargat culture ca. 500-300 BCE (Parpola 2013; for Gamayun-Itkul maps, see Borzunov 2026).
- Gamayun: "a new ethnic group" on the Konda, Lozva, Tavda, Iset, Chusovaya, and Kama ca. 1000/900-400/300 BCE (Stepanov et al. 2021, Zimina & Anoshko 2021, Borzunov 2026); and evolved from the Lozva-Atlym culture on the Lower Ob and Konda ca. 1200 BCE (Zimina & Anoshko 2021). Lozva-Atlym was in the ST zone (Török 2023: Fig 2).
- Gamayun migrations southward to the Central Urals ca. 1000 BCE due to a humid climate, which worsened hunting and fishing conditions (Koryakova & Epimakhov 2007: 277-282). The Gamayun moved along rivers until reaching the Itkul culture, which had more settlements and metalworking. After an initial conflict, Gamayun-Itkul symbiosis took place.
- Gamayun-Itkul core zone around the Upper Iset river; Gamayun pottery finds along the rivers Chusovaya, Kama, Ufa, Belaya, Ural, Tobol, Tura, Tavda, and Lozva (see Borzunov 2026: 74: Fig 1). The Central Urals Gamayun and Volga-Kama Ananyino both had round-bottomed pottery (Koryakova & Epimakhov 2007), while the Volga-Oka Dyakovo and Gorodets cultures had flat-bottomed pottery (Klima 1996).

1. Overview: Uralic cultures

- Gamayun culture was mostly stone-age, learning stockbreeding and metallurgy from local cultures, i.e. the Central Urals Mezhovka ca. 1200-700 BCE, and the Siberian forest-steppe Barkhatovo tribes (Zimina & Anoshko 2021). The Mezhovka culture (AKA Mezhovskaya) extended from the Kama to the Mid-Iset.
- Lozva-Atlym arrived in the Mezhovka zone and formed the Gamayun culture, which overlapped with the Mezhovka-descendant Itkul culture (Török 2023).

2. Problems: Uralic linguistics

- No clear Uralic loanwords into Indo-Iranian (Holopainen 2019: Appendix II).
- Only 3 "plausible" Pre-Proto-Indo-Iranian loans into Uralic after Holopainen 2023, and no Pre-PII loans into Ob-Ugric or Samoyedic (Finngreek 2025 + 2026a).
- Häkkinen 2023 Pre-PII loan phase, with an Ob-Ugric distributional criterion, has no lexical examples after Holopainen 2023 (Finngreek 2025).
- Only 2-3 examples of Proto-Iranian loans into Uralic: Only 5-6 (5%) of the ~120 "convincing" loans can be assigned as Pre-PII or PI (Finngreek 2025 + 2026a).
- Loans into e.g. the Ugric sprachbund seem to be phonologically dyssynchronous (Holopainen & Aikio 2023).

2. Problems: Uralic genetics

- No Nganasan-like DNA in the Volga-Kama or Central Urals until the late Bronze Age + early Iron Age, e.g. Mezhovka + Sarmatian_IA (see Unterländer et al. 2017: Fig 7): No “Nganasan” DNA in the Yamnaya, Afanasievo, Sintashta, Andronovo, or Srubnaya cultures, despite various proposed contact scenarios with early Uralic (Proto-Indo-European, Proto-Tocharian, Proto-Indo-Iranian, etc.).
- Many cultures still lack samples, e.g. Lozva-Atlym and Gamayun (Török 2023).
- No ancient DNA samples in the Russian Arctic from Yakutia to the Lower Ob, which could be relevant to discussion of e.g. the Uralic "K=9" Lower Ob ancestry.
- Grünthal et al. 2022 + Zeng et al. 2025 don't explain Uralic genetic expansion after Yak-Kra DNA in ST Rostovka ca. 2000-1800 BCE; Parpola 2022 + Häkkinen 2023 models mostly don't rely on genetic evidence.
- Genetics data is not relied on by most Uralic historical linguists: Interdisciplinary studies are seldom produced.

2. Problems: Uralic cultures

- Grünthal et al. 2022, Zeng et al. 2025, and Häkkinen 2023 lack cultural elaboration after their respective ST and Koptiyaki assignments for Proto-Uralic.
- Parpola 2013 + 2022 provide cultural elaboration, but rely on obsolete phylogenetic groups (e.g. "Indo-Uralic", "West Uralic", "East Uralic") for cultural assignments.
- Language shift is not always bound to cultural or ethnic boundaries; and multiple languages can be shared by a single material culture (see Rahkonen 2013).

3. Solutions: Uralic linguistics

- "Pre-PII" loans could instead be šubstratal (see Metsäranta 2025, Finngreek 2026a); "PI" loans could instead be conditional (Finngreek 2025 + 2026a).
- After Finngreek 2025 + 2026a, II => U loans can be revised to a two-phase model (1. Scythian / Pre-Alanic ca. 800 BCE > 2. Sarmatian / Alanic ca. 600-500 BCE), redating the early II => U loans from ca. 2000-500 BCE to ca. 800-500 BCE.
- Helleno-Uralic (HU) theory: Apparently Hellenic loans into the Uralic protophases, beginning with riparian contact between Archaic Greek and the "Archaic Uralic" (Finno-Ugric + Samoyedic) sprachbund (Finngreek 2026b), and continuing into the western Uralic sprachbund (Finngreek 2026c). HU contact in two phases:
 1. Archaic riparian contact ca. 800-700 BCE: **áros** 'flood meadow' => *ara, **múskhæ** 'riverbend' => *mučka, **orgás** 'river-valley' => *orka, **póros** 'bridge, ferry' => *pora, **ókhtha** 'riverbank' => *uktə 'land route between water routes'; **elá-** 'to go, visit' => U *elä-, **mélæ** 'probe' => *melä 'paddle', **skáphæ** 'dugout canoe' => *kappə
 2. Western Uralic sprachbund ca. 700-500 BCE: **ánkos** 'lowland' => *änkəš, **nâma** 'foreland' => nāmə, **thaimós** 'seedling' => *taiməš, **págos** 'frost' => *päkkəš
- Greek => western Uralic loans include a new substitution **-os** => *-əš, vs. the earlier substitution **-os** => Archaic Uralic *-a, *-ə (see Finngreek 2026b + 2026c).

3. Solutions: Uralic linguistics

- Greek => western Uralic loans may support locating the Greek source language to somewhere in or near the Volga-Oka Mari core zone (Finngreek 2026c).
- HU phonology seems to be synchronous with Archaic Greek (see Samuels 2017):
 1. Fronting of H <υ> from /u/ to /y/ after 700 BCE not reflected by most HU etyma, even into terminal western Uralic branches (see <https://finngreek.com/lexicon/>).
 2. Dissimilation of H <η> from /æ:/.../æ:/ to /ε:/.../æ:/ already in **mélāē** => *melä; but the raising of H <ου> from /o:/ to /u:/ after 400 BCE is found in neither **ourǎē** 'tail' => U *ora 'squirrel' nor **roumíze-** 'to be rough, tremble' => F *romise-, suggesting that contact ended by the 5th century BCE.
- Helleno-Uralic contact therefore ca. 800-500 BCE on a linguistic basis – but based on very few examples.

3. Solutions: Uralic genetics

- A new genetic diachrony under consideration:
 1. Yak-Kra DNA on the Lower Ob from ca. 2000-1800 BCE
 2. Proto-Uralic K=9 ancestry on the Lozva-Atlym Ob-Konda ca. 1200 BCE
 3. Gamayun migrations from the Konda-Lozva-Tavda to the Upper Iset ca. 1000-900 BCE brought Uralic DNA to the Ananyino-Mezhovka-Itkul cultural horizon
- However, this model will require support from Lozva-Atlym + Gamayun samples, and modeling of Uralic pops with those samples, in order to determine their affinity.
- The polygenetic mosaic of Archaic Greek DNA may present challenges in searching for sample evidence of Greek speakers in or near the Uralic core zones.

3. Solutions: Uralic cultures

- A new cultural diachrony under consideration:
 1. Lozva-Atlym: Proto-Uralic
 2. Gamayun-Itkul: Archaic Uralic sprachbund (incl. Samoyedic)
 - 3a. Ananyino: Western Uralic sprachbund (vs. “Pre-Proto-Permic” in Parpola 2022)
 - 3b. Itkul-Sargat: Ugric sprachbund
- Ananyino axe finds (see Parpola 2022: Fig 6) may show an overland route in the Saarikivi 2022 Khanty core zone (Ishim-Irtysh interfluve).
- II => U loans may have been from Scythian cultures during the 1st millennium BCE (Heggarty & Renfrew 2014: 1694).
- Early Scythian near the Lower Don-Volga ca. 800 BCE, early Sarmatian on the Ural river ca. 500 BCE (Unterländer et al. 2017: Fig 2).
- Greeks colonized the northern Black Sea from the 7th or 8th century BCE (Petratos 2014, Petropoulos 2003), settling as far north as the Scythian forest-steppe, and as far northeast as the mouth of the Don (Tsetschladze 2019).
- Herodotus' *Histories*: Greek Geloni moved from the Black Sea to east of the Don / Tanais river, and 15 days north of the Sarmatian steppe, into a deep forest on a large body of water. Geloni lived in a city called Gelonus, in the nomadic Budini nation.

3. Solutions: Uralic cultures

- The modern assignment of Bil'sk as Gelonus (see Tsetskhladze 2019) is not tenable: The only primary source about Gelonus is Herodotus' *Histories*, which contradicts the geography and chronology of Bil'sk:
 - Shramko & Zadnikov 2021: Bil'sk on the Vorskla (Dnieper tributary) ca. 8th-4th centuries BCE, inhabited by low-mobility agriculturalists and cattle breeders with low military influence – but Gelonus per Herodotus: “Nomads” two weeks northeast of the Don, in a "large and powerful" Budini nation that formed a military alliance with the Geloni and Scythians against Darius I, until the all-wooden city of Gelonus was abandoned and burned down ca. 513 BCE.
- Bil'sk is therefore likely to be a different Scythian-era site; while the northeastward ruins of Gelonus are likely still undiscovered – but perhaps could be located around the Mid-Volga Mari core zone.

4. Conclusion

1. 1000-900 BCE:

Proto-Uralic speakers from the Lozva-Atlym culture (Ob-Konda) migrated southward along upland rivers until reaching the Mezhovka-Itkul Central Urals, and there formed the Gamayun-Itkul culture (Iset-Chusovaya-Kama) in the eastern Ananyino horizon.

2. 900-700 BCE:

An Archaic Uralic sprachbund formed along the Iset-Chusovaya-Kama, and later came into contact with Gelonian Greek and Scythian Iranian from the southwest, i.e. the Volga-Kama and its southerly steppe, until Samoyedic finally exited the Ananyino horizon and migrated east to the Chulym-Yenisei.

3. 700-500 BCE:

A western Uralic sprachbund formed along the Kama-Volga-Oka; a Ugric sprachbund also formed along the Iset-Tobol-Irtysh. Finally, the western Uralic and Ugric languages disintegrated into their terminal core zones, which may be evidenced by new loanword layers, ancient DNA samples with significant Uralic ancestry, and Ananyino axe routes.

4. Conclusion

- Although this presentation assigns Proto-Uralic to the Lozva-Atlym culture, there are still problems to discuss in future research:
 - How did Pre-Proto-Uralic develop between ST Yak-Kra and Lozva-Atlym?
 - Was Proto-Uralic originally spoken by Lozva tribes, Atlym tribes, or others?
- Position and migration of Proto-Samoyedic in the Archaic Uralic zone needs more clarity: Neither distant nor close to the other Uralic branches; and the early II => U loans are absent from Samoyedic, but HU loans include Samoyedic – due to a more upstream location of the Mid-Volga Gelonus vs. steppe Scytho-Sarmatian?
- The HU lexicon has not been peer-reviewed, which may impact current linguistic conclusions about HU theory, e.g. if proposed etyma become obsolete.
- Many more ancient samples in relevant BA and IA cultures (Ananyino, Mezhovka, Lozva-Atlym, Gamayun-Itkul, Itkul-Sargat, Tagar, ST, Netted Ware, etc.) would be helpful for progress in solving Proto-Uralic expansion via Yak-Kra ~ Nganasan-like DNA and K=9 ancestry.



Figure 1: Proto-Uralic expansion (Finngreek 2026)

- 2000 BCE: Yakutia-Krasnoyarsk (Yak-Kra) DNA migration to the Lower Ob
- 1200 BCE: Proto-Uralic (PU) formation in the Lower Ob Lozva-Atlym culture
- 1000 BCE: Lozva-Atlym / Gamayun migrations to the Central Urals + Kama
- 900 BCE: Archaic Uralic (AU) formation in the Central Urals Gamayun-Itkul culture
- 800 BCE: Contact with Scythian (Ir) and Greek (H) in the Volga-Kama region
- 700 BCE: Western Uralic (W) formation in the Volga-Kama Ananyino culture
- Ugric (Ug) formation in the Iset-Tobol-Irtysh Itkul-Sargat culture
- 500 BCE: Terminal Uralic branches, e.g. Finnic (F) and Sami (S)

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